



Automation | Innovation | Communication

IoT Automation

 **FIREFLY** |  **DRAGONFLY**

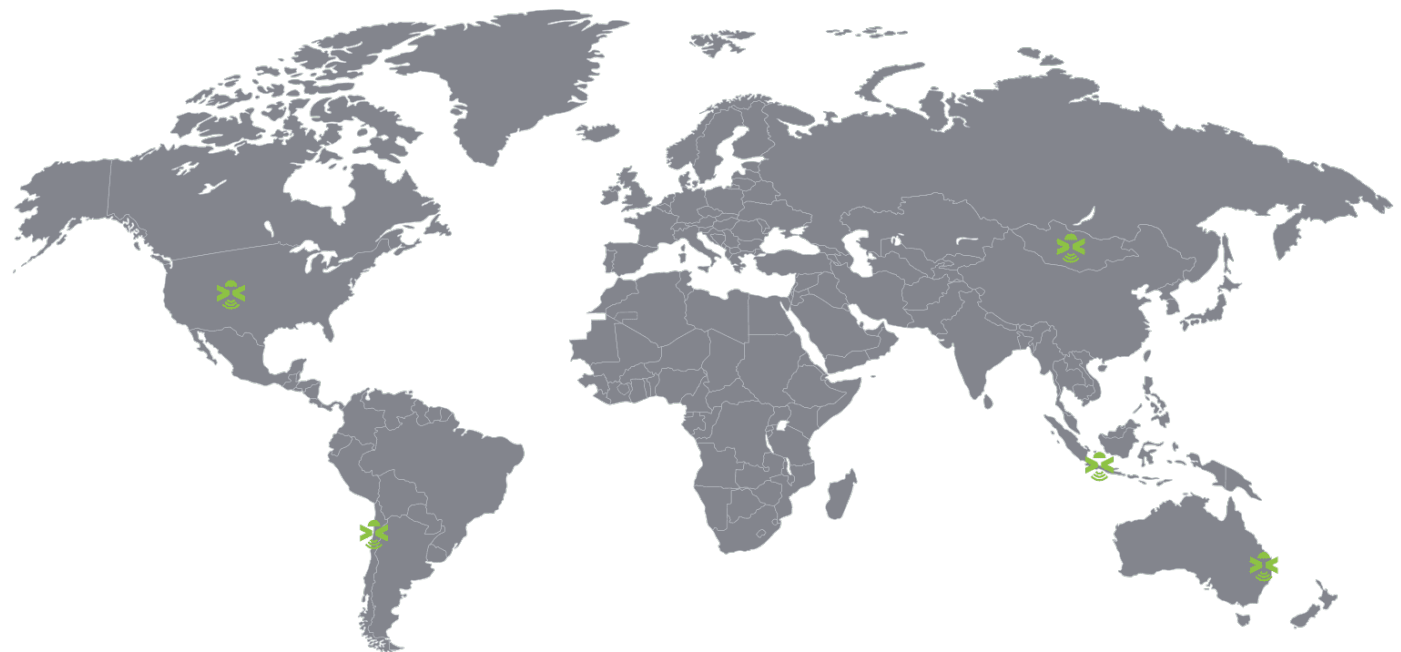


WHO ARE WE?

We are a dedicated global team specializing in underground mining and tunneling Operational Technology. We partner with clients to utilize advanced technology, enhancing both safety and productivity in their operations.

WHERE ARE WE?

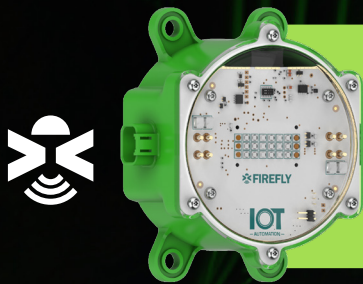
Our Global Headquarters is in Sydney, Australia, with additional offices on the Gold Coast, Queensland. We also have North and Latin American offices in Denver, Colorado, and Santiago, Chile. Our Regional Mining Centers are located in Ulaanbaatar, Mongolia, and Jakarta, Indonesia.



WHAT DO WE DO?

Smart Lighting

We offer software-controlled smart lighting for safer evacuations and emergency responses in underground mines and tunnels.

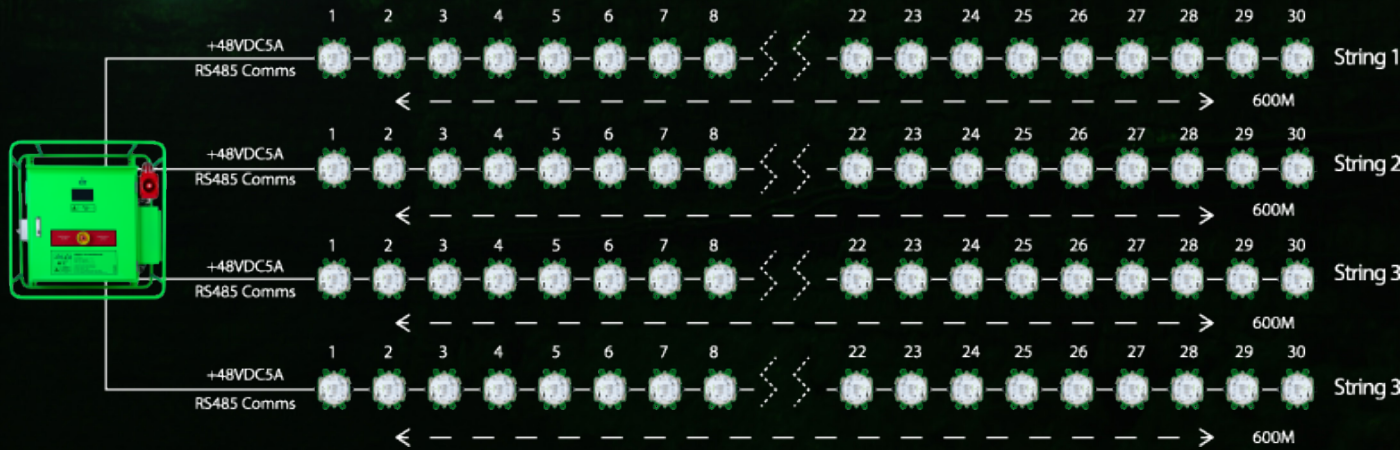


Our **FireFly Smart Lighting System**, designed for mining, uses various illumination colors and modes to enhance productivity and underground worker safety.



For mining and tunneling operations requiring high levels of lighting, we have developed the **DragonFly Smart Lighting System**. This system enhances daily safety and productivity while significantly improving emergency preparedness and incident response for mining and construction projects.

Both products can be integrated into a central control server, which coordinates the underground UPS control panels. These panels manage the lights by providing battery-backed power and communication to the lighting modules. The UPS control panels can function as standalone lighting cells or connect to the central control server, forming an extensive site-wide smart lighting network.



UNDERGROUND COMMUNICATIONS AND INFRASTRUCTURE

Our qualified team has deployed some of the largest underground communications networks in the world of mining, including both radio and data networks.

We deploy fiber, copper, leaky feeder and radio utilizing best of breed technologies, not aligned to a single manufacturer we propose solutions that work best for our client and eliminate risk of deploying technology.



CASE STUDY UNDERGROUND MINE IN INDONESIA

IoT Automation recently implemented the Dragonfly Smart Lighting System at an Indonesian mine to provide an additional layer of safety around fixed plant machinery.

Automated chutes, conveyors and crushers have long presented significant hazards to workers during start up and operation. Global statistics still tell a sad story, with fixed plant machinery crush, pinch and fall hazards leading to the deaths and significant injuries of many workers. Current safety mechanisms such as fixed point siren/strobe lights are either prone to failure or obstructed from view via infrastructure or unable to be heard by double hearing protection.

The Dragonfly system is connected to the control systems of the fixed plant. Enabling fixed plant state changes such as startup/loading/operating/maintenance modes to automatically trigger the lighting system. This enables the immediate and area wide demarcation to the workforce, of the real time state of the machinery. A second layer of safety is provided by the workers location being detected by the Dragonfly lights.

Combining clear instruction to workers on the ground around whether it is safe or not safe to be in or around fixed plant machinery – combined with knowing if any workers actually are in or around fixed plant machinery when they should or should not be – provides management with greater visibility and lower risk of injuries to their work force. Providing a valuable additional layer of safety to their already existing safety procedures.

- **Chute system offline = Green Solid**
- **Chute handling material = Red Flashing**
- **Chute wet muck Inrush event = Red Flashing**
- **Chute maintenance = Blue flashing**

“A single DragonFly Smart Light provides a range of selectable colour options, including red, green, amber, blue and white as well as multiple modes of operation including static, flashing and trailing. It’s another good and successful project and also great experience to work with IoT Automation.”

— Yulius Bless

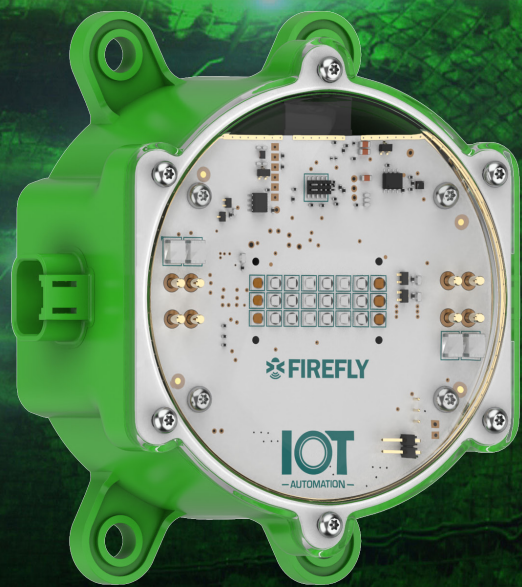


CASE STUDY MINERA CANDELARIA

In our latest case study, Cesar Olmos Vega talks about the deployment of the FireFly Smart Lighting system in the Cross 9 of the Candelaria Norte underground mine, and the numerous benefits the system has provided for the mine and its underground personnel.

“The most positive result that we have so far is the ability to alert underground workers that a heavy vehicle is coming up the decline, as well as having the option to evacuate the decline to the portal automatically, even if we have a power outage as the FireFly system has its own UPS that can last for up to six hours.”

– Cesar Olmos Vega



THE FIREFLY SMART LIGHTING SYSTEM

The FireFly Smart Lighting System is a 48VDC-based solution, renowned for its versatility and adaptability across various situations and needs.

Designed with the mining industry in mind, this system offers a multitude of benefits that can significantly enhance operations. While the advantages vary across different applications and industries, common benefits include:



Zone Demarcation



Environmental
Monitoring Systems



Level-wide or Mine-
wide Evacuations



Personnel Detection



Vehicle Awareness

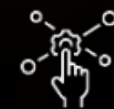


THE DRAGONFLY SMART LIGHTING SYSTEM

The Dragonfly Smart Lighting System is an AC-based solution designed to deliver battery maintained general, emergency and evacuation lighting in both mines and tunnels. Its modular design allows for rapid and easy expansion within the operational area. Their comprehensive functions include:



Real-Time Detection and
Alerting of High-Risk
Emergency Events.



Backhaul of Data from
Environmental Sensors and
Geotechnical Instruments



Improved Lighting for Post-
Event Inspections



Awareness of Vehicle Traffic



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